Biobanking and translational medicine: The academic perspective

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The University of Arizona Biorepository is responsible for collecting, storing, tracking, processing, and distributing human tissue, blood, and other bio-specimens. The Biorepository's mission is to provide high-quality, clinically annotated specimens to the research community at this and other institutions as well as to industry involved in biomedical research. Researchers can use the stored materials for future research studies to learn more about cancer, diabetes, and other health problems. The bank will provide a ready supply of samples, so researchers do not have to look for donors for each new study. The biorepository provides consistent collection, processing, banking and clinical correlative procedures and operates in conjunction with departments of Surgery, Ophthalmology, Pulmonology, Aging, Neurology, Neurosurgery, Biomedical Engineering, OB-GYN, Cardiology and others. Currently the biorepository has in its possession 1.5 million patient samples obtained through Pathology. The biorepository utilizes universal electronic consents providing annotated clinical data on each patient through an Honest Broker arrangement. All samples are linked to patient medical identifiers allowing for access to the electronic health record now and at all times in the future in a de-identified fashion. Fresh frozen paraffin blocks, blood, plasma, sera, urine and other biological fluids; as well as biopsies and other tissues/bio-samples are stored. In addition, DNA/RNA/proteins are also banked for all samples. Significantly, we have now developed methodology allowing for genomic and phenotypic sample characterization for approx. $2/patient sample. As all samples are stored according to industry best practices, in temperature-controlled, monitored, and alarmed environments (in LN2 or other freezers as appropriate) to maximize resource integrity utilizing cGTP practices whenever possible, the biorepository also serves as a source of cells and tissues for projects involving translational and regenerative medicine. To facilitate investigator interactions the biorepository utilizes Tissue Metrix2 as the central database for information on all banked bio-samples. The software has a web-based front-end with an Oracle database which permits access from web browsers across multiple platforms. It employs role based security to permit control over user access to information stored in the database. The i2b2 open source exploration tool is used as a storefront for investigator sample requests in a text based format.